Amendments to the Claims

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A fast high precision matching method comprising the steps of:

a) Input an image;

b) Input a template;

c) Perform initial search using the input image and the template based on a matching function to create an initial search result output containing only matching function values at discrete (x,y) positions;

d) Create high precision matching function by interpolating the matching function values of discrete (x,y) positions making ~~it as a~~ them matching function values of subpixel positions ~~values~~ or of invariant high precision parameters;

e) Perform high precision match by high precision matching function maximization directly using the matching function values at discrete (x,y) positions ~~initial search result~~ from the step (c), the input image, and the same template from step (b) to create a high precision match result output without image matching wherein the high precision match result around a pixel position (x,y) is the subpixel values α and β and other parameters correspond to the maximum value of the high precision matching function.

Claims 2-10 (canceled).

Claim 11 (Previously presented): The method of claim 1 wherein the matching function maximization for the subpixel values or invariant high precision parameters is performed using optimization methods.

Claims 12 -13 (canceled).

Claim 14 (currently amended): A fast high precision matching method comprising the steps of:

a) Input an image;
b) Input a template containing pre-calculated template variance parameters;
c) Perform initial search using the input image and the template based on a matching function to create an initial search result output containing only matching function values at discrete (x,y) position;
d) Create high precision matching function by interpolating the matching function values of discrete (x,y) positions making ~~it as a~~ them matching function values of subpixel positions ~~values~~ or of invariant high precision parameters;
e) Perform high precision match by high precision matching function maximization directly using the matching function values at discrete (x,y) positions ~~initial search result~~ from step (c), the input image, and the same template from step (b) to create a high precision match result output without image matching wherein the high precision match result around a pixel position (x,y) is the subpixel values α and β and other parameters correspond to the maximum value of the high precision matching function.

Claims 15-16 (canceled).

Claim 17 (currently amended): A fast high precision projection matching method comprising the steps of:

a) Input a projection profile;

b) Input a template profile;

c) Create high precision matching function by interpolating matching function values at discrete (x,y) positions and samples parameters making ~~it as a~~ them matching function values of subpixel positions ~~values~~ or of subsampling parameters;

d) Perform high precision match by high precision matching function maximization using the projection profile, the same template profile from step (b) to create a high precision projection match result output Perform high precision match by high precision matching function maximization directly using the matching function values at discrete (x,y) positions ~~initial search result~~ from step (c), the input image, and the same template from step (b) to create a high precision match result output without image matching wherein the high precision match result around a pixel position (x,y) is the subpixel values α and β and other parameters correspond to the maximum value of the high precision matching function..

Claims 18-19 (canceled).

Claim 20 (currently amended): A fast invariant high precision matching method comprising the steps of:

a) Input an image;

b) Input a template;

c) Perform initial search using the input image and the template based on a matching function to create an initial search result output containing only matching function values at discrete (x,y) position;

d) Create high precision matching function by interpolating the matching function values of discrete (x,y) positions making ~~it as a~~ them matching function values of subpixel positions ~~values~~ or of invariant high precision parameters;

e) Perform invariant high precision match by high precision matching function maximization directly using the matching function values at discrete (x,y) positions ~~initial search result~~ from step (c), the input image, and the same template from step (b) to create an invariant high precision match result output without image matching wherein the high precision match result around a pixel position (x,y) is the subpixel values α and β and other parameters correspond to the maximum value of the high precision matching function.

Claims 21-22 (canceled).

Claim 23 (previously presented): The method of claim 20 wherein interpolating the matching function includes log-converted radial-angular transformation and linear interpolation.

Claims 24-27 (canceled).